Listing of the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application.

1-2. (Previously Canceled)

3. (Currently Amended) A material comprising:

a ~~sintered,~~ porous substrate ~~comprised~~ comprising a sintered mixture of ~~a~~ polymer particles and ~~a~~ functional additive particles ~~and having a surface~~, wherein the porous substrate has a surface that comprises at least one of the functional additive particles ~~a region defined by at least some of the functional additive~~;

a spacer covalently bound to the at least one functional additive particle ~~the region~~; and

a biological or chemical moiety covalently or non-covalently bound to the spacer.

4. (Canceled)

5. (Currently Amended) The material of claim ~~1 or~~ 3, wherein the polymer particles are made of a polymer which is a polyolefin, polyether, nylon, polycarbonate, poly(ether sulfone), or a mixture thereof.

6. (Original) The material of claim 5, wherein the polyolefin is ethylene vinyl acetate; ethylene methyl acrylate; polyethylenes; polypropylenes; ethylene-propylene rubbers; ethylene-propylene-diene rubbers; poly(l-butene); polystyrene; poly(2-butene); poly(1-pentene); poly(2-pentene); poly(3-methyl-1-pentene); poly(4-methyl-1-pentene); 1,2-poly-1,3-butadiene; 1,4-poly-1,3-butadiene; polyisoprene; polychloroprene; poly(vinyl acetate); poly(vinylidene chloride); poly(tetrafluoroethylene) (PTFE); poly(vinylidene fluoride) (PVDF); acrylonitrile-butadiene-styrene (ABS); or a mixture thereof.

7. (Original) The material of claim 5, wherein the polyolefin is polyethylene or polypropylene.

8. (Previously Amended) The material of claim 5, wherein the polyether is polyether ether ketone (PEEK), (poly(oxy-1,4-phenylene-oxy-1,4-phenylene-carbonyl-1,4-phenylene)), polyether sulfone (PES), or a mixture thereof.

9. (Currently Amended) The material of claim ~~1 or~~ 3, wherein the functional additive comprises a hydroxyl, carboxylic acid, anhydride, acyl halide, alkyl halide, aldehyde, alkene, amide, amine, guanidine, malimide, thiol, sulfonate, sulfonic acid, sulfonyl ester, carbodiimide, ester, cyano, epoxide, proline, disulfide, imidazole, imide, imine, isocyanate, isothiocyanate, nitro, or azide functional group.

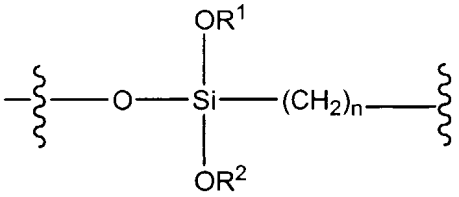
10. (Original) The material of claim 9, wherein the functional additive comprises a hydroxyl, amine, aldehyde, or carboxylic acid functional group.

11. (Original) The material of claim 10, wherein the functional additive comprises a hydroxyl functional group.

12. (Currently Amended) The material of claim ~~1 or~~ 3, wherein the functional additive is silica powder, silica gel, chopped glass fiber, controlled porous glass (CPG), glass beads, ground glass fiber, glass bubbles, kaolin, alumina oxide, or a mixture thereof.

13. (Original) The material of claim 3, wherein the spacer is a silane, functionalized silane, diamine, alcohol, ester, glycol, anhydride, dialdehyde, terminal difunctionalized polyurethane, dione, macromer, or a multifunctional polymer.

14. (Previously Amended) The material of claim 13, wherein the spacer is of Formula I:



Formula I

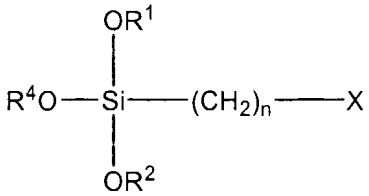
wherein R^1 and R^2 are each independently hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; and n is an integer from about 1 to about 18.

15. (Currently Amended) The material of claim ~~1 or~~ 3, wherein the chemical or biological moiety is a drug, hydrophilic moiety, catalyst, antibiotic, antibody, antimycotic, carbohydrate, cytokine, enzyme, glycoprotein, lipid, nucleic acid, nucleotide, oligonucleotide, peptide, protein, ligand, cell, ribozyme, or a combination thereof.

16. (Currently Amended) A material comprising:

a ~~sintered,~~ porous substrate comprising a sintered mixture of polyethylene particles and ~~substrate~~ having a surface in which at least one particle of a functional additive has been embedded; and ~~,~~

~~and~~ a spacer precursor of Formula II covalently attached to the at least ~~a portion~~ one particle of ~~said~~ functional additive:



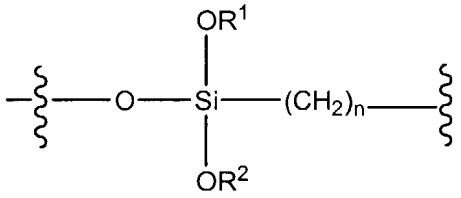
Formula II

wherein R^1, R^2 and R^4 are each independently hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; n is an integer from about 1 to about 18; and X is OH, NH_2, CHO, CO_2H, NCO, or epoxy.

17. (Currently Amended) A material comprising:

a ~~sintered,~~ porous ~~polyethylene~~ substrate comprising a sintered mixture of polyethylene particles and having a surface in which at least one particle of a functional additive has been embedded; and ~~,~~

~~and~~ a spacer of Formula I:



Formula I

wherein R^1 and R^2 are each independently hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; and n is an integer from about 1 to about 18;

and wherein the spacer is covalently attached to the at least ~~a portion~~ one particle of ~~said~~ functional additive and to a chemical or biological moiety.

18. (Original) The material of claim 17, wherein the chemical or biological moiety is a nucleotide, oligonucleotide, polynucleotide, peptide, cell, ligand, or protein.

19. (Currently Amended) A method of providing a material which comprises:

~~forming a sintered, porous substrate comprised of~~ sintering particles of a polymer and

particles of a functional additive having functional groups to provide a porous substrate ~~and~~ having a surface, wherein the surface comprises at least one of the functional groups ~~a region defined by at least some of the functional additive, wherein the region contains at least one functional group~~;

attaching a spacer to at least one particle of functional additive by contacting ~~the~~ a functional group of the at least one particle of functional additive with ~~a~~ the spacer under reaction conditions suitable for the formation of a covalent bond between an atom of the functional group and an atom of the spacer; and

contacting the spacer with a chemical or biological moiety under reaction conditions suitable for the formation of a covalent or non-covalent bond between an atom of the spacer and an atom of the chemical or biological moiety.

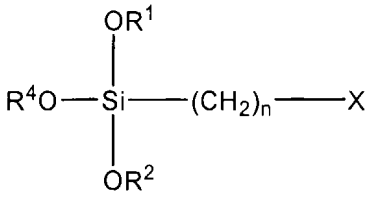
20. (Original) The method of claim 19, wherein the functional group is hydroxyl, carboxylic acid, anhydride, acyl halide, alkyl halide, aldehyde, alkene, amide, amine, guanidine, malimide, thiol, sulfonate, sulfonic acid, sulfonyl ester, carbodiimide, ester, cyano, epoxide, proline, disulfide, imidazole, imide, imine, isocyanate, isothiocyanate, nitro, or azide.

21. (Currently Amended) The method of claim 19, wherein the porous substrate is formed by sintering the particles of functional additive ~~beads~~ and then attaching the spacer, or attaching the spacer to at least one of the particles of functional additive ~~beads~~ prior to sintering the ~~beads~~ particles.

22. (Currently Amended) A method of providing a material which comprises:

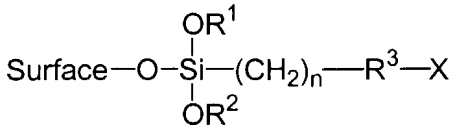
~~forming a sintered, porous substrate comprised of~~ sintering particles of a polymer and particles of a functional additive having functional groups to provide a porous substrate ~~and~~ having a surface, wherein the surface comprises at least one of the functional groups ~~a region defined by at least some of the functional additive, wherein the region contains at least one hydroxyl group~~; and

contacting the hydroxyl group with a compound of Formula II:



Formula II

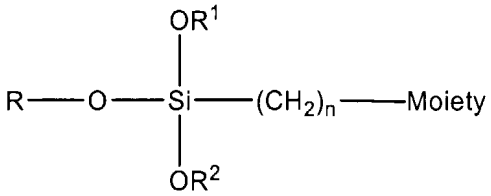
wherein each of R^1, R^2, and R^4 each independently is hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; n is an integer from about 1 to about 18; and X is OH, NH_2, CHO, CO_2H, NCO, or epoxy under conditions suitable for the formation of a material of Formula III:



Formula III

wherein Surface is the surface of the porous substrate.

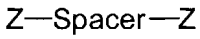
23. (Previously Amended) The method of claim 22 wherein the material of Formula III is contacted with a chemical or biological moiety having an amine group if X is an aldehyde or carboxylic acid, or a chemical or biological moiety having an aldehyde or carboxylic acid group if X is an amine, under reaction conditions suitable for the formation of a material of Formula IV:



Formula IV

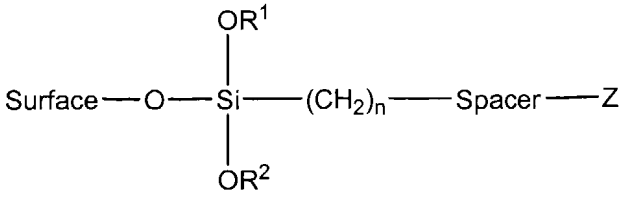
wherein Moiety is the chemical or biological moiety, and wherein Surface is the surface of the porous substrate.

24. (Previously Amended) The method of claim 22 wherein X is NH_2 in the material of Formula III, and the material is contacted with a compound of Formula V:



Formula V

wherein Spacer is a hydrophilic segment and Z is a terminal group capable of covalently or non-covalently bonding to proteins, amino acids, oligonucleotides, under reaction conditions suitable for the formation of a material of Formula VI:



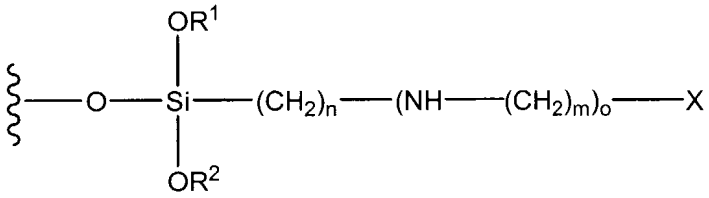
Formula VI

wherein Surface is the surface of the porous substrate.

25. (Original) The method of claim 24, wherein Spacer is a hydrophilic polyurethane, polyethylene glycol, or polyelectrolyte and wherein Z is isocyanurate, aldehyde, amino, carboxylic acid, or N-hydroxysuccimide.

26-27 (Previously Canceled)

28. (Previously Amended) The material of claim 13 wherein the spacer to which the porous substrate and biological or chemical moiety is attached is of Formula VIII:

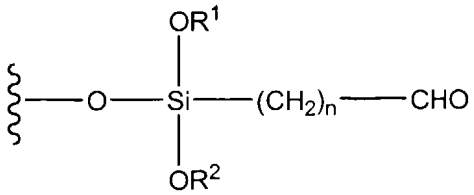


Formula VIII

wherein the porous substrate is bound to the oxygen atom; R^1 and R^2 each independently is hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; X is OH, NH_2, CHO, CO_2H, NCO, or epoxy; n is an integer from about 1 to about 5; m is an integer from about 1 to about 5; and o is an integer from 0 to about 3.

29. (Original) The material of claim 25 wherein X is CHO or NH_2.

30. (Previously Amended) The material of claim 13 wherein the spacer to which the porous substrate and biological or chemical moiety is attached is of Formula IX:



Formula IX

wherein the porous substrate is bound to the oxygen atom; R^1 and R^2 each independently is hydrogen, substituted or unsubstituted alkyl, aryl, or aralkyl; and n is from about 1 to about 18.